Figure 1. Amino acid sequence alignment in human IgG isotypes and their variants.

Human IgG Isotype	Amino Acid Position				
	228.....234	235	236	237.....330	331
G1	Pro.....Leu	Leu	Gly	Gly.....Ala	Pro
G2	Pro.....Val	Ala	.....	Gly.....Ala	Pro
G4	Ser.....Phe	Leu	Gly	Gly.....Ser	Ser
G1 variant	Pro.....***Val***	***Ala***	Gly	Gly.....Ala	***Ser***
G2 variant	Pro.....Val	Ala	.....	Gly.....Ala	***Ser***
G4 variant	***Pro***.....Phe	***Ala***	Gly	Gly.....Ser	Ser

ID number	Corresponding Row in this Figure 1
SEQ ID NO:26	G1
SEQ ID NO:27	G2
SEQ ID NO:28	G4
SEQ ID NO:22	G1 variant
SEQ ID NO:18	G2 variant
SEQ ID NO:20	G4 variant

Figure 2A. DNA and deduced amino acid sequences of hG-CSF-L-vFc$_{\gamma 2}$

DNA SEQ ID NO: 17
Amino Acid Sequence SEQ ID NO: 18

```
aag ctt ccc aga ccc atg gct gga cct gcc acc cag agc ccc atg aag ctg atg gcc ctg      60
HindIII              M   A   G   P   A   T   Q   S   P   M   K   L   M   A   L
                    -30                                     -20
cag ctg ctg ctg tgg cac agt gca ctc tgg aca gtg cag gaa gcc acc ccc ctg ggc cct     120
 Q   L   L   L   W   H   S   A   L   W   T   V   Q   E   A   T   P   L   G   P
                    -10                                 -1   1
gcc agc tcc ctg ccc cag agc ttc ctg ctc aag tgc tta gag caa gtg agg aag atc cag     180
 A   S   S   L   P   Q   S   F   L   L   K   C   L   E   Q   V   R   K   I   Q
                10                                      20
ggc gat ggc gca gcg ctc cag gag aag ctg tgt gcc acc tac aag ctg tgc cac ccc gag     240
 G   D   G   A   A   L   Q   E   K   L   C   A   T   Y   K   L   C   H   P   E
                30                                      40
gag ctg gtg ctg ctc gga cac tct ctg ggc atc ccc tgg gct ccc ctg agc agc tgc ccc     300
 E   L   V   L   L   G   H   S   L   G   I   P   W   A   P   L   S   S   C   P
                50                                      60
agc cag gcc ctg cag ctg gca ggc tgc ttg agc caa ctc cat agc ggc ctt ttc ctc tac     360
 S   Q   A   L   Q   L   A   G   C   L   S   Q   L   H   S   G   L   F   L   Y
                70                                      80
cag ggg ctc ctg cag gcc ctg gaa ggg atc tcc ccc gag ttg ggt ccc acc ttg gac aca     420
 Q   G   L   L   Q   A   L   E   G   I   S   P   E   L   G   P   T   L   D   T
                90                                     100
ctg cag ctg gac gtc gcc gac ttt gcc acc acc atc tgg cag cag atg gaa gaa ctg gga     480
 L   Q   L   D   V   A   D   F   A   T   T   I   W   Q   Q   M   E   E   L   G
               110                                     120
atg gcc cct gcc ctg cag ccc acc cag ggt gcc atg ccg gcc ttc gcc tct gct ttc cag     540
 M   A   P   A   L   Q   P   T   Q   G   A   M   P   A   F   A   S   A   F   Q
               130                                     140
cgc cgg gca gga ggg gtc cta gtt gcc tcc cat ctg cag agc ttc ctg gag gtg tcg tac     600
 R   R   A   G   G   V   L   V   A   S   H   L   Q   S   F   L   E   V   S   Y
               150                                     160
cgc gtt cta cgc cac ctt gcc cag ccc gga tcc ggt ggc ggt tcc ggt gga ggc gga agc     660
 R   V   L   R   H   L   A   Q   P   G   S   G   G   G   S   G   G   G   G   S
               170                                     180
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ggc ggt gga gga tca gag cgc aaa tgt tgt gtc gag tgc cca ccg tgc cca gca cca cct    720
 G   G   G   G   S   E   R   K   C   C   V   E   C   P   P   C   P   A   P   P
                 190                                         200
gtg gca gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc    780
 V   A   G   P   S   V   F   L   F   P   P   K   P   K   D   T   L   M   I   S
                 210                                         220
cgg acc cct gag gtc acg tgc gtg gtg gtg gac gtg agc cac gaa gac ccc gag gtc cag    840
 R   T   P   E   V   T   C   V   V   V   D   V   S   H   E   D   P   E   V   Q
                 230                                         240
ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag cca cgg gag gag    900
 F   N   W   Y   V   D   G   V   E   V   H   N   A   K   T   K   P   R   E   E
                 250                                         260
cag ttc aac agc acg ttc cgt gtg gtc agc gtc ctc acc gtt gtg cac cag gac tgg ctg    960
 Q   F   N   S   T   F   R   V   V   S   V   L   T   V   V   H   Q   D   W   L
                 270                                         280
aac ggc aag gag tac aag tgc aag gtc tcc aac aaa ggc ctc cca gcc tcc atc gag aaa   1020
 N   G   K   E   Y   K   C   K   V   S   N   K   G   L   P   A   S   I   E   K
                 290                                         300
acc atc tcc aaa acc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc   1080
 T   I   S   K   T   K   G   Q   P   R   E   P   Q   V   Y   T   L   P   P   S
                 310                                         320
cgg gag gag atg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tac ccc   1140
 R   E   E   M   T   K   N   Q   V   S   L   T   C   L   V   K   G   F   Y   P
                 330                                         340
agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc aca   1200
 S   D   I   A   V   E   W   E   S   N   G   Q   P   E   N   N   Y   K   T   T
                 350                                         360
cct ccc atg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag   1260
 P   P   M   L   D   S   D   G   S   F   F   L   Y   S   K   L   T   V   D   K
                 370                                         380
agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac aac   1320
 S   R   W   Q   Q   G   N   V   F   S   C   S   V   M   H   E   A   L   H   N
                 390                                         400
cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa tga gaa ttc                   1368
 H   Y   T   Q   K   S   L   S   L   S   P   G   K       EcoRI
                 410                                     418
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Figure 2B. DNA and deduced amino acid sequences of hG-CSF-L-vFc$_{\gamma 4}$

DNA SEQ ID NO: 19
Amino Acid Sequence SEQ ID NO: 20

```
aag ctt ccc aga ccc atg gct gga cct gcc acc cag agc ccc atg aag ctg atg gcc ctg      60
HindIII              M   A   G   P   A   T   Q   S   P   M   K   L   M   A   L
                    -30                                             -20

cag ctg ctg ctg tgg cac agt gca ctc tgg aca gtg cag gaa gcc acc ccc ctg ggc cct     120
 Q   L   L   L   W   H   S   A   L   W   T   V   Q   E   A   T   P   L   G   P
                    -10                                         -1   1

gcc agc tcc ctg ccc cag agc ttc ctg ctc aag tgc tta gag caa gtg agg aag atc cag     180
 A   S   S   L   P   Q   S   F   L   L   K   C   L   E   Q   V   R   K   I   Q
                10                                              20

ggc gat ggc gca gcg ctc cag gag aag ctg tgt gcc acc tac aag ctg tgc cac ccc gag     240
 G   D   G   A   A   L   Q   E   K   L   C   A   T   Y   K   L   C   H   P   E
                30                                              40

gag ctg gtg ctg ctc gga cac tct ctg ggc atc ccc tgg gct ccc ctg agc agc tgc ccc     300
 E   L   V   L   L   G   H   S   L   G   I   P   W   A   P   L   S   S   C   P
                50                                              60

agc cag gcc ctg cag ctg gca ggc tgc ttg agc caa ctc cat agc ggc ctt ttc ctc tac     360
 S   Q   A   L   Q   L   A   G   C   L   S   Q   L   H   S   G   L   F   L   Y
                70                                              80

cag ggg ctc ctg cag gcc ctg gaa ggg atc tcc ccc gag ttg ggt ccc acc ttg gac aca     420
 Q   G   L   L   Q   A   L   E   G   I   S   P   E   L   G   P   T   L   D   T
                90                                             100

ctg cag ctg gac gtc gcc gac ttt gcc acc acc atc tgg cag cag atg gaa gaa ctg gga     480
 L   Q   L   D   V   A   D   F   A   T   T   I   W   Q   Q   M   E   E   L   G
               110                                             120

atg gcc cct gcc ctg cag ccc acc cag ggt gcc atg ccg gcc ttc gcc tct gct ttc cag     540
 M   A   P   A   L   Q   P   T   Q   G   A   M   P   A   F   A   S   A   F   Q
               130                                             140

cgc cgg gca gga ggg gtc cta gtt gcc tcc cat ctg cag agc ttc ctg gag gtg tcg tac     600
 R   R   A   G   G   V   L   V   A   S   H   L   Q   S   F   L   E   V   S   Y
               150                                             160

cgc gtt cta cgc cac ctt gcc cag ccc gga tcc ggt ggc ggt tcc ggt gga ggc gga agc     660
 R   V   L   R   H   L   A   Q   P   G   S   G   G   G   S   G   G   G   G   S
               170                                             180
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```
ggc ggt gga gga tca gag tcc aaa tat ggt ccc cca tgc cca cca tgc cca gca cct gag     720
 G   G   G   G   S   E   S   K   Y   G   P   P   C   P   P   C   P   A   P   E
                 190                                     200

ttc gcg ggg gga cca tca gtc ttc ctg ttc ccc cca aaa ccc aag gac act ctc atg atc     780
 F   A   G   G   P   S   V   F   L   F   P   P   K   P   K   D   T   L   M   I
                 210                                     220

tcc cgg acc cct gag gtc acg tgc gtg gtg gtg gac gtg agc cag gaa gac ccc gag gtc     840
 S   R   T   P   E   V   T   C   V   V   V   D   V   S   Q   E   D   P   E   V
                 230                                     240

cag ttc aac tgg tac gtg gat ggc gtg gag gtg cat aat gcc aag aca aag ccg cgg gag     900
 Q   F   N   W   Y   V   D   G   V   E   V   H   N   A   K   T   K   P   R   E
                 250                                     260

gag cag ttc aac agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg     960
 E   Q   F   N   S   T   Y   R   V   V   S   V   L   T   V   L   H   Q   D   W
                 270                                     280

ctg aac ggc aag gag tac aag tgc aag gtc tcc aac aaa ggc ctc ccg tcc tcc atc gag    1020
 L   N   G   K   E   Y   K   C   K   V   S   N   K   G   L   P   S   S   I   E
                 290                                     300

aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gag cca cag gtg tac acc ctg ccc cca    1080
 K   T   I   S   K   A   K   G   Q   P   R   E   P   Q   V   Y   T   L   P   P
                 310                                     320

tcc cag gag gag atg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tac    1140
 S   Q   E   E   M   T   K   N   Q   V   S   L   T   C   L   V   K   G   F   Y
                 330                                     340

ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc    1200
 P   S   D   I   A   V   E   W   E   S   N   G   Q   P   E   N   N   Y   K   T
                 350                                     360

acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc agg cta acc gtg gac    1260
 T   P   P   V   L   D   S   D   G   S   F   F   L   Y   S   R   L   T   V   D
                 370                                     380

aag agc agg tgg cag gag ggg aat gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac    1320
 K   S   R   W   Q   E   G   N   V   F   S   C   S   V   M   H   E   A   L   H
                 390                                     400

aac cac tac aca cag aag agc ctc tcc ctg tct ctg ggt aaa tga gaa ttc                1371
 N   H   Y   T   Q   K   S   L   S   L   S   L   G   K       EcoRI
                 410                                     419
```

Figure 2C. DNA and deduced amino acid sequences of hG-CSF-L-vFc$_{\gamma 1}$

DNA SEQ ID NO: 21
Amino Acid Sequence SEQ ID NO: 22

```
aag ctt ccc aga ccc atg gct gga cct gcc acc cag agc ccc atg aag ctg atg gcc ctg      60
HindIII              M   A   G   P   A   T   Q   S   P   M   K   L   M   A   L
                    -30                                     -20
cag ctg ctg ctg tgg cac agt gca ctc tgg aca gtg cag gaa gcc acc ccc ctg ggc cct     120
 Q   L   L   L   W   H   S   A   L   W   T   V   Q   E   A   T   P   L   G   P
                    -10                                 -1   1
gcc agc tcc ctg ccc cag agc ttc ctg ctc aag tgc tta gag caa gtg agg aag atc cag     180
 A   S   S   L   P   Q   S   F   L   L   K   C   L   E   Q   V   R   K   I   Q
                10                                      20
ggc gat ggc gca gcg ctc cag gag aag ctg tgt gcc acc tac aag ctg tgc cac ccc gag     240
 G   D   G   A   A   L   Q   E   K   L   C   A   T   Y   K   L   C   H   P   E
                30                                      40
gag ctg gtg ctg ctc gga cac tct ctg ggc atc ccc tgg gct ccc ctg agc agc tgc ccc     300
 E   L   V   L   L   G   H   S   L   G   I   P   W   A   P   L   S   S   C   P
                50                                      60
agc cag gcc ctg cag ctg gca ggc tgc ttg agc caa ctc cat agc ggc ctt ttc ctc tac     360
 S   Q   A   L   Q   L   A   G   C   L   S   Q   L   H   S   G   L   F   L   Y
                70                                      80
cag ggg ctc ctg cag gcc ctg gaa ggg atc tcc ccc gag ttg ggt ccc acc ttg gac aca     420
 Q   G   L   L   Q   A   L   E   G   I   S   P   E   L   G   P   T   L   D   T
                90                                     100
ctg cag ctg gac gtc gcc gac ttt gcc acc acc atc tgg cag cag atg gaa gaa ctg gga     480
 L   Q   L   D   V   A   D   F   A   T   T   I   W   Q   Q   M   E   E   L   G
               110                                     120
atg gcc cct gcc ctg cag ccc acc cag ggt gcc atg ccg gcc ttc gcc tct gct ttc cag     540
 M   A   P   A   L   Q   P   T   Q   G   A   M   P   A   F   A   S   A   F   Q
               130                                     140
cgc cgg gca gga ggg gtc cta gtt gcc tcc cat ctg cag agc ttc ctg gag gtg tcg tac     600
 R   R   A   G   G   V   L   V   A   S   H   L   Q   S   F   L   E   V   S   Y
               150                                     160
cgc gtt cta cgc cac ctt gcc cag ccc gga tcc ggt ggc ggt tcc ggt gga ggc gga agc     660
 R   V   L   R   H   L   A   Q   P   G   S   G   G   G   S   G   G   G   G   S
               170                                     180
```

```
ggc ggt gga gga tca gac aaa act cac aca tgc cca ccg tgc cca gca cct gaa gtc gcg     720
 G   G   G   G   S   D   K   T   H   T   C   P   P   C   P   A   P   E   V   A
                 190                                     200
ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg     780
 G   G   P   S   V   F   L   F   P   P   K   P   K   D   T   L   M   I   S   R
                 210                                     220
aca cct gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc     840
 T   P   E   V   T   C   V   V   V   D   V   S   H   E   D   P   E   V   K   F
                 230                                     240
aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag cag     900
 N   W   Y   V   D   G   V   E   V   H   N   A   K   T   K   P   R   E   E   Q
                 250                                     260
tac aac agc acg tac cgg gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat     960
 Y   N   S   T   Y   R   V   V   S   V   L   T   V   L   H   Q   D   W   L   N
                 270                                     280
ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca gcc tcc atc gag aaa acc    1020
 G   K   E   Y   K   C   K   V   S   N   K   A   L   P   A   S   I   E   K   T
                 290                                     300
atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc cgg    1080
 I   S   K   A   K   G   Q   P   R   E   P   Q   V   Y   T   L   P   P   S   R
                 310                                     320
gat gag ctg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc    1140
 D   E   L   T   K   N   Q   V   S   L   T   C   L   V   K   G   F   Y   P   S
                 330                                     340
gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc acg cct    1200
 D   I   A   V   E   W   E   S   N   G   Q   P   E   N   N   Y   K   T   T   P
                 350                                     360
ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag agc    1260
 P   V   L   D   S   D   G   S   F   F   L   Y   S   K   L   T   V   D   K   S
                 370                                     380
agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac    1320
 R   W   Q   Q   G   N   V   F   S   C   S   V   M   H   E   A   L   H   N   H
                 390                                     400
tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa tga gaa ttc                        1365
 Y   T   Q   K   S   L   S   L   S   P   G   K       EcoRI
                 410                             417
```